

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-23. (Cancelled)

Claim 24 (Currently Amended): A method for producing a micro electro-mechanical device package, comprising the steps of:

forming a thermally decomposable sacrificial layer on a substrate of a micro electro-mechanical device, the sacrificial layer encapsulating a portion of the micro electro-mechanical device;

forming a ~~protective~~ an overcoat layer around the sacrificial layer; and

thermally decomposing the sacrificial layer, wherein decomposed molecules of the sacrificial layer permeate through the ~~protective~~ overcoat layer, and wherein a gas cavity is formed where the thermally decomposable sacrificial layer was formed.

Claim 25 (Original): The method of claim 24, further comprising the steps of:

depositing the sacrificial layer by spin-coating; and

patterning the sacrificial layer.

Claim 26 (Original): The method of claim 24, wherein the sacrificial layer has a decomposition temperature less than a decomposition temperature of the substrate and a decomposition temperature of the protective layer.

Claim 27 (Original): The method of claim 24, wherein the substrate comprises a silicon material.

Claim 28 (Original): The method of claim 24, wherein the substrate comprises a non-silicon material.

Claim 29 (Currently Amended): The method of claim 24, wherein the thickness of the protective overcoat layer is within the range of 50 nm and 500 μm .

Claim 30 (Currently Amended): The method of claim 24, wherein the protective overcoat layer has not been perforated.

Claim 31 (Currently Amended): The method of claim 24, wherein the protective overcoat layer is substantially free of sacrificial material after the sacrificial material has been thermally decomposed.

Claim 32 (Currently Amended): The method of claim 24, wherein the protective overcoat layer provides an airtight enclosure around the gas cavity.

Claim 33 (Currently Amended): The method of claim 32, wherein the protective overcoat layer provides protection from mechanical forces.

Claim 34 (Currently Amended): The method of claim 33, wherein the protective overcoat layer further provides protection against water.

Claim 35 (Currently Amended): The method of claim 34, wherein the protective overcoat layer further provides protection against oxygen gas.

Claim 36 (Currently Amended): The method of claim 34, wherein the protective overcoat layer further provides protection against exposure to gaseous materials.

Claim 37 (Original): The method of claim 24, wherein the micro electro-mechanical device includes a released mechanical structure before the sacrificial material is formed.

Claim 38 (Currently Amended): The method of claim 24, further comprising the steps of:

before the ~~protective~~ overcoat layer is formed, attaching the micro electro-mechanical device to a metal packaging frame, wherein the ~~protective~~ overcoat layer comprises an epoxy resin encapsulating the micro electro-mechanical device and metal packaging frame assembly.

Claim 39 (Currently Amended): The method of claim 38, further comprising the step of:

heating the micro assembly at a temperature for curing the ~~protective~~ overcoat layer; and

heating the micro assembly at a temperature for decomposing the sacrificial layer, the temperature for decomposing the sacrificial layer exceeding the temperature for curing the ~~protective~~ overcoat layer.

Claim 40 (Currently Amended): The method of claim 24, further comprising the step of:

forming a barrier layer around the ~~protective~~ overcoat layer, the barrier layer providing a stronger protection against mechanical forces than the protective layer.

Claim 41 (Original): The method of claim 40, wherein the barrier layer comprises a metal material.

Claim 42 (Currently Amended): The method of claim 40, further comprising the steps of:

creating a vacuum inside the gas cavity by heating the micro electro-mechanical device in a chamber; and

after the vacuum is created, forming a barrier layer around the ~~protective~~ overcoat layer within the chamber to provide a vacuum-packed enclosure around the gas cavity, the barrier layer comprising a metal material.

Claim 43 (Original): The method of claim 42, further comprising the steps of:
after the barrier layer is formed, attaching the micro electro-mechanical device to an integrated circuit package structure; and
encapsulating the electro-mechanical device and integrated circuit package structure in a protective coating.

Claim 44 (Original): The method of claim 42, wherein the integrated circuit package structure comprises a leadframe.

Claim 45 (Original): The method of claim 42, wherein the integrated circuit package structure comprises a ceramic package.

Claim 46 (Original): The method of claim 42, wherein the step of thermally decomposing the sacrificial layer occurs inside the vacuum chamber.

Claim 47 (Original): The method of claim 24, further comprising the steps of:
after the sacrificial layer is decomposed, attaching the micro electro-mechanical device to an integrated circuit package structure; and
encapsulating the electro-mechanical device and package structure in a protective coating.

Claim 48 (Original): The method of claim 47, wherein the integrated circuit package structure comprises a leadframe.

Claim 49 (Original): The method of claim 47, wherein the integrated circuit package structure comprises a ceramic package.

Claim 50 (Original): The method of claim 24, wherein thermal decomposition temperature of the sacrificial material is less than 100 degrees Celsius.

Claim 51 (Cancelled)

Claim 52 (New): The method of Claim 24, wherein said gas cavity is formed while decomposed molecules produced by decomposition of the sacrificial layer permeate the first overcoat layer.

Claim 53 (New): The method of Claim 24, wherein said overcoat layer comprises a polymer.

Claim 54 (New): The method of Claim 24, wherein said overcoat layer comprises a photodefinable polymer.

Claim 55 (New): The method of Claim 24, wherein said overcoat layer is a solid overcoat layer.